NAVSUP FLEET LOGISTICS CENTER PEARL HARBOR
SUSTAINABILITY TEAM

INTRODUCTION

The mission of the Naval Supply Systems Command (NAVSUP) Fleet Logistics Center Pearl Harbor (FLCPH) is to provide logistics and supply support services to joint warfighters, allied forces, and coalition partners in the Mid-Pacific. As the Department of Defense's (DoD) largest Defense Fuel Supply Point (DFSP), NAVSUP FLC Pearl Harbor stores, manages, and distributes over 220 million gallons of fuel annually to all DoD services, U.S. Coast Guard, and the National Oceanic and Atmospheric Administration (NOAA). FLCPH also provides contracting services; fleet husbanding services; hazardous material support; ocean cargo terminal operations; postal services; materials handling equipment (MHE) maintenance; material support for Naval Facilities Engineering Command (NAVFAC); supply, logistics and deployment support for Air Force units on Joint Base Pearl Harbor-Hickam; and personal property shipping/storage services for DoD and Coast Guard members. The command encompasses over 120 facilities throughout Navy Region Hawaii, and employs over 440 Navy, Air Force and Army military and civilian employees.

FLCPH's Environmental Team (Team) oversees the command's environmental programs, ensuring compliance in all operational areas to include fuel, ocean terminals, hazardous material, and MHE operations. The Team actively promotes implementation of innovative solutions and best practices, command participation, and community engagement to protect Hawaii's environment, while accomplishing mission objectives. Team members include:

LCDR Drew Lovgren, Fuel Department Director, NAVSUP FLC Pearl Harbor
Mr. John Floyd, Deputy Fuel Department Director, NAVSUP FLC Pearl Harbor
LTJG Frances Hunter, Public Works Officer, NAVSUP FLC Pearl Harbor
Mr. Derek Wong, Supply Information System Analyst, NAVSUP FLC Pearl Harbor
Mr. Harold Bugado, Material Management Division Supervisor, NAVSUP FLC Pearl Harbor
Ms. Sonya Steinhoff-Aspili, Hazardous Material Branch Supervisor, NAVSUP FLC Pearl Harbor

BACKGROUND

The Team is comprised of members from two organizations within FLCPH. LCDR Lovgren, Mr. Floyd, LTJG Hunter, and Mr. Wong work in the Fuel Department. In addition to operating and maintaining our fuel facilities, they also are responsible for the command's facilities sustainment, repair, modernization, and environmental programs. They ensure all facilities projects are compliant with Executive Order 13693 and seek opportunities to improve energy and water efficiency and environmental quality in all FLCPH operations. Mr. Bugado and Ms. Steinhoff-Aspili work in the

Logistics Readiness Department, Material Management Division and are responsible for providing hazardous material (HAZMAT) support to Navy and Air Force commands on Joint Base Pearl Harbor-Hickam. A significant part of their mission is to minimize the volume of HAZMAT purchases and the generation of hazardous waste.

ACCOMPLISHMENTS

In FY 2015 and 2016, NAVSUP FLC Pearl Harbor executed several energy conservation and xeriscaping projects, continued efforts to minimize purchase and storage of hazardous material throughout the Region, collaborated with the Environmental Protection Agency to improve operation and maintenance of Underground Storage Tanks (UST), and conducted several command engagement and community outreach events. These accomplishments were achieved during a period of significant funding and personnel hiring constraints.

Sustainable Landscaping:

- Irrigation Water Use Reduction/Sustainable Landscaping: In 2015, the Team planted self-sustainable plants near FLCPH's headquarters, protecting the landscape from further erosion and saving Joint Base Pearl Harbor-Hickam an estimated 31,000 gallons of potable water annually. The project called for foliage strips at the top of each shoreline slope to prevent erosion but, the Team directed designers to incorporate *"ma'o hau hele"* [Hibiscus calyphyllus], *"naupaka kai"* [Scaevola sericea], and "*puhuehue"* [Ipomea pes-caprae, subsp. brasiliensis] which are considered self-sustaining vegetation, requiring minimal water.

[FLCPH's photo of xeriscaping]

Team Leader LCDR Lovgren receives a brief from Team member LT Hebert on the xeriscaping features along the shoreline between Kilo11 and 12 wharves.

Compliance with E.O. 13693

- Energy Conservation: Major Lighting Upgrades: During the award consideration period, our Team completed six major facility upgrades, installing light emitting devices in locations that historically used incandescent light bulbs. Mr. Wong collaborated with NAVFAC Hawaii's Energy Conservation Team to conduct industry research and cost comparisons so we could comply with E.O. 13693 and achieve substantial cost savings. The following projects improved overall light quality at reduced energy consumption rates, resulting in improved working conditions and cost savings:

1. Red Hill Underground Fuel Storage Facility and Tunnel: The Red Hill Fuel Storage Facility is a unique asset providing critical strategic refueling capability to the entire Pacific region. The 3.2-mile tunnel system of this historic facility must be illuminated 24 hours a day for security, safety, and operational purposes. As an added challenge, all fixtures must be explosion-proof due to proximity to fuel pipelines. The Team reached out to the JBPHH Energy Conservation Board for expert evaluation

of lighting upgrade options. After an in-depth evaluation, the Team upgraded the lighting system comprised of 1053 fixtures from dual 32-watt bulbs, low efficiency ballasts, and semi-opaque lenses to single 25-watt high efficiency T8 bulbs coupled with efficient high-factor ballasts and transparent ribbed lenses. This effort translated to annual energy savings of approximately 262,500 KWH or $147,000. Longer lasting bulbs additionally reduced maintenance costs, providing life cycle savings of over $160,000. The new bulb configurations also improved visibility, light quality, and overall safety within the tunnel.

2. Upper Tank Farm: The Upper Tank Farm includes six above ground fuel tanks that formerly used 25 400-watt high pressure sodium (HPS) security lights. Replacing the lights with 150-watt light emitting diode (LED) luminaires provided annual energy savings of approximately 22,800 KWH/$33,000. The Team also took advantage of the opportunity to install new fixtures compliant with the Dark Sky initiative. The new fixtures are oriented downwards with reduced lateral spread, preventing fledgling shearwater birds (protected by the Migratory Bird Treaty Act and EO 13186) from mistaking artificial lighting for celestial markers.

[FLCPH's photo of LED lighting]

Ernest Brooks, left, and Derek Wong stand next to a security light pole with the new LED security lights at the Upper Tank Farm.

3. Hotel Pier: This is the main fueling pier for Pearl Harbor. The Team replaced 16 400-watt HPS security lamps with 150-watt LED lamps, reducing energy usage by 63%. The annual energy savings are estimated to be 14,600 KWH/$8,300, not including additional savings from reduced maintenance and lamp replacement.

4. Underground Pump House: FLCPH's Fuel Department controls all Pearl Harbor fueling operations from the underground pump house, a 24-hour manned facility. The facility previously used 29 high pressure sodium explosion-proof fixtures. The Team conducted a detailed cost comparison and re-lamped the facility with 100-watt High Energy Discharge (HID) bulbs, significantly improving light quality while reducing energy usage by 33%.

5. Exterior Lighting: NAVSUP FLC Pearl Harbor leveraged an LED lighting initiative by the Federal Prison Industries to replace exterior lights at eleven facilities throughout the command with energy-efficient LED fixtures. The annual energy savings are estimated to be 73,303 KWH/$19,700; reducing energy usage by 35%. This project supported the energy policy and energy demand reduction goals of the Energy Policy Act of 2015. The new fixtures are also compliant with the Dark Sky initiative, protecting Hawaiian shearwater birds.

6. MHE Warehouse Roof Replacement: NAVSUP FLC Pearl Harbor took advantage of the opportunity to reduce lighting energy requirements while replacing the roof of the 35,000 square foot MHE facility. In addition to replacing fluorescent lamps with energy-efficient LED fixtures, the roof design incorporated translucent panels to provide ample natural light. This significantly reduced usage of warehouse light fixtures, saving energy and maintenance costs.

	Fixtures	Previous Bulb	New Bulb	Annual Energy Savings	Annual Cost Savings
Red Hill	1053	32W Dual F32	25W Single T8	262,500 KWH	$160,000
UTF	25	400W HPS	150W LED	22,800 KWH	$33,000
Hotel Pier	16	400W HPS	150W LED	14,600 KWH	$8,300
UGPH	29	150W HPS	100W HID	25,404 KWH	$3,000
Exterior Lighting	188	Multiple	Multiple	73,303 KWH	$19,700
TOTAL				**398,607 KWH**	**$224,000**

The Team is continuing to apply energy-saving technology and best practices into 2017 and beyond. Three projects were initiated to upgrade legacy lighting fixtures; heating, ventilation and air conditioning (HVAC) systems; and heavy equipment to further reduce the command's overall energy consumption. The Team is also spearheading one of Commander Navy Region Hawaii's (CNRH) energy conservation projects for the installation of photovoltaic panels on our headquarters building, expanding the Region's alternative energy footprint.

[FLCPH's photo of translucent panels]

NAVSUP FLC Pearl Harbor's new roof uses translucent panels to maximize natural light, reducing lighting energy costs and improving the work environment.

1. Airfield Fuel Lighting: The Team initiated a project to replace over 70 exterior incandescent light bulbs with light emitting devices at the Hickam Airfield Fuel Facility to reduce the command's overall energy consumption by 128,391 KWH. Annual savings of $34,537 is expected when the project is completed in April 2017.

2. Bldg. 475 HVAC: The Team completed the design phase for a major HVAC system upgrade at the FLCPH headquarters building and will oversee the installation of one Variable Air Volume (VAV) system in 2017. The VAV system will replace eight constant-volume air handling units (AHUs), substantially reducing overall energy consumption and improving the facility's energy management effectiveness.

3. Bldg. 475 Elevators: The Team completed the designs to replace two elevators while moving ahead with the construction of a third elevator within NAVSUP FLC Pearl Harbor's Headquarters building. By replacing elevator motor generators with solid state variable frequency drives, these projects will reduce elevator power requirements by 30%.

4. Bldg. 475 Roof Replacement: The Team added photovoltaic panel pedestals into their roof design for FLCPH's headquarters building to take part in Joint Base Pearl Harbor-Hickam's Solar Leasing Agreement. With the installation of these photovoltaic panel pedestals, FLCPH may be able to install and utilize photovoltaic cells as early as the end of 2017.

Education, Outreach and Partnering:

- Environmental Training and Education: The Team provides environmental training for all Command personnel, customizing training to match job requirements. Training such as Environmental Management System (EMS) awareness, transportation and handling of hazardous material, hazardous waste accumulation management, and storm water pollution prevention are included in employees' annual training plans. All Fuel Department personnel completed underground storage tank manager and operator training, Hazardous Waste Operations and Emergency Response (HAZWOPER) training; and conducted two oil spill response exercises in compliance with the Oil Pollution Act of 1990 (OPA 90) and UST Federal regulations.

[FLCPH's photo of Earth Day]

Earth Day Fair visitors were able to see many interesting exhibits, including these archeological artifacts discovered at the installation.

- FLC Pearl Harbor Earth Day Fair: In April 2015, the Team organized and hosted an Earth Day Fair for all commands on base, the largest military-led Earth Day event in the Region. With support from the National Oceanographic and Atmospheric Administration, Oahu Invasive Species Council, Environmental Protection Agency, Navy Region Hawaii, and Clean Islands Council, the Team sponsored over 20 educational stations that provided information on a wide range of environmental protection programs. Earth Day events were publicized in the command plan of the week, Naval Supply Systems Command newsletter, and the Joint Base Pearl Harbor-Hickam newspaper, "Ho'okele."

[FLCPH's photo of Earth Day2]

At the 2015 NEX Earth Day Fair, LCDR Lovgren explained how the Navy and FLC Pearl Harbor protect the environment while continuing fuel operations.

- Navy Exchange Earth Day Exhibit: In April 2015 and 2016, the Team participated in the Navy Exchange Earth Day Fair. This annual event, hosted at the NEX outdoor living store, provided an excellent opportunity to present the command's environmental protection program to military families and the general public. LCDR Lovgren provided briefings on the command's accomplishments and initiatives to fair attendees, including students from our partner school, Navy Hale Keiki School.

- Earth Day at Navy Hale Keiki School: To promote awareness among youth in the community, the Team shared information on energy and water conservation with students, and sponsored an Earth Day coloring contest at Navy Hale Keiki School.

[FLCPH's photo of Hale Keiki Assembly]

Navy Hale Keiki School winners of the Earth Day coloring contest proudly show their certificates. Congratulating them are Ms. Gulledge, the school administrator and Commander Villanueva, NAVSUP FLC Pearl Harbor Executive Officer

Material Management:

FLCPH provides Regional Consolidated Hazardous Material Reutilization and Inventory Management Program (CHRIMP) services to Navy shore commands and hazardous material supply support to Air Force units on Joint Base Pearl Harbor-Hickam. In FY 16, management of the Navy and Air Force programs were merged under FLC's Logistics Readiness Department. The merger facilitated implementation of best practices across the services, enabling establishment of standard processes for procuring, receiving, recording, and tracking disposition of hazardous material (HAZMAT) used by Air Force and Navy shore commands. The HAZMAT Team applied the Air Force's practice of establishing maximum allowable quantities of HAZMAT that may be procured and maintained at customer sites (lockers) to Navy commands. The application of maximum allowable quantities further reduced the volume of HAZMAT purchased by Navy commands, resulting in less excess HAZMAT. In FY16, the volume of HAZMAT stored at FLC's Regional CHRIMP Center was reduced by 12,291 line items, freeing up 7,552 square feet of warehouse space. In addition, the CHRIMP Center issued 8,385 line items of re-use (excess) HAZMAT, avoiding new purchase and material disposal costs. By the end of FY17, the HAZMAT Team plans to relocate all Navy-owned HAZMAT from Building 229 to Building 1070H where Air Force-owned HAZMAT is currently stored.

AWARD CRITERIA

Program Management: The Team leveraged the capabilities and expertise of personnel from FLCPH as well as subject matter experts across Defense Logistics Agency (DLA), NAVFAC Hawaii, and Navy Region Hawaii to sustain efforts in preventing pollution, complying with environmental regulations, conserving energy, reducing hazardous waste, and increasing environmental protection awareness. Continual engagement with Navy Region Hawaii environmental personnel enabled the command to ensure plans such as spill prevention and storm water pollution prevention are current and executable.

Due to budget constraints, the Team focused on managing environmental programs with minimum application of resources. Many activities like the Earth Day Fair events were cost neutral, yet provided invaluable opportunities to educate the workforce and community. Careful monitoring of work activities by supervisors and application of best business practices enabled process changes that met environmental requirements, command goals, and reduced expenditure of funds.

Technical Merit: The Team skillfully melded a wide variety of technologies to arrive at cost-effective, environmentally progressive solutions. The command implemented cutting-edge lighting technology at pierside facilities, reducing light pollution, and protecting the natural environment of unique and often endangered species. The Team carefully assessed all available lighting technologies to select energy-efficient lighting solutions at seven locations, spanning three square miles. By using xeriscaping concepts as opposed to landscaping with standard plants in the construction of erosion control along the harbor shoreline, the command significantly reduced consumption of potable water.

Orientation to Mission: The Team maintained its focus on the command's mission when it considered the energy and environmental readiness projects and initiatives to be executed. The budgetary issues encountered during this period underscored the need to look at waste reduction, operational efficiencies and low cost measures when developing solutions. Compliance with environmental regulations and policies were accomplished while reducing operating costs and ensuring mission capability. In many

cases, coordination with project designers and contractors on environmental requirements through comprehensive project reviews enabled minimal change orders, kept projects on track and eliminated impacts to command missions.

Transferability: Information on facilities projects was provided to NAVSUP, DLA and Navy Region Hawaii. Earth Day events were publicized in the installation and NAVSUP newspapers. The command also used social media to keep stakeholders informed about our environmental management programs.

Stakeholder Interaction: The Team recognized that the successful implementation of environmental protection strategies requires engagement with other commands and agencies at the federal, state and local level, as well as with private organizations. The Team coordinated events such as the annual Earth Day Fair, to allow other agencies and organizations to participate and observe how the command meets its mandate to protect the environment while fully supporting its military mission.

Project Impact/Outcomes: During this period, FLCPH achieved annual energy cost reductions of over $200,000, annual water savings of 31,000 gallons, and reduced light pollution to protect local sea birds. The command continued its commitment to environmental excellence through community involvement, training all command members, and implementing processes to reduce procurement of hazardous material. These efforts demonstrated that environmentally friendly initiatives can enhance the command's mission posture while reducing costs, improving efficiency and enhancing worker safety while providing increased protections to the environment.